

M A L A R I A,



THE COMMON CAUSE OF

CHOLERA, INTERMITTENT FEVER, AND ITS ALLIES.

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P R E F A C E.

IT is patent to all that there is difficulty in obtaining a sufficiency of the better classes of working men for the British Army. Emigration carries off the bone and sinew of the country, and the Army is content to take the leavings. The "working" classes are as ambitious as the more fortunate "upper" classes, and it is evident that while emigration promises everything that ambition can desire, the ranks of the Army have nothing but a monotonous captivity to offer to those who are the backbone and the life's blood of the Service. And even if a Field-Marshal's bâton were in the knapsack of the British soldier, the want of a proper system of sanitary disposition would hinder his attaining this summit of glory. Our members of Parliament sit for weeks sifting the impure details of corrupt elections, but it has not yet

been worth their while to determine a practical remedy for the imperfect sanitary organization in our colonies and dependencies. But until a sanitary dictator, responsible to Parliament alone, and unfettered by military despotism, is appointed for our Armies and our Fleets,—till then will the Nation have repetitions of such calamities as have happened in India, Bermuda, and Hong Kong.

5 CAVERSHAM ROAD, LONDON, N.W.

May, 1866.

MALARIA, THE COMMON CAUSE OF CHOLERA, INTERMITTENT FEVER, AND ITS ALLIES.

IN the interesting lectures on cholera recently delivered by Dr. Maclean, Professor of Medicine in the Army Medical School, which have had a wide circulation through the medium of the various medical journals, so much was said that anything more on the subject may seem superfluous. Yet there is a thread in the intricate labyrinth of this disease which, although old and long recognised by Indian observers, is still worthy of some further thought in these latter days of scientific progress. It may prove a link on which to found a theory and find a cure, or it may be worthless and ineffectual. As Dr. Maclean justly remarked, there is no knowing how soon an Army Medical Officer may be called upon to battle with cholera. It is therefore right that he should study the disease from every point of view, and that no theory and no treatment should be despised until they have been duly and thoughtfully considered. At any rate, let not the Army Medical Officer go forth unprepared and ill read on this serious subject, for the trying hour will come upon him unawares, and like the foolish virgin he will cry for light when it is too late. Text-books will offer no assistance in his hour of need, for there will be no principles in store to guide him.

Happily for this country the visits of real cholera are few and far between; yet the intermissions between its visits are not ill-spent in testing all means proposed to help Nature to resist its noxious influences. But India is the home of undying cholera and fever, the twin sisters, offspring of a malarious mother, who divide the land between them.

As my lot was cast in Bengal from 1857 to 1862, I have had the opportunity of studying malarious disease, and, in common

with many more members of the Army Medical Department, I have been much struck with the similarity between the collapsed state in cholera and the collapsed or early stage of intermittent fever.

During the mutiny, cholera checked the progress of Havelock's little band on Lucknow, and made them turn back on Cawnpore. Cholera stepped in at Delhi, and decimated the few regiments that were struggling against the host within the walls. And during peace in all cantonments of the plains, cholera makes its appearance yearly, cutting off a few. But there are times when it is not contented with a few. Then the cholera wave bursts over the malarious hotbed of India, and sweeps the people, black and white, before it. Doctors and their remedies are then as unable to stem its violence, as human power is unable to stop the flowing tide.

One of the most peculiar features of cholera is this: With one patient the means adopted may seem to have done good, and with the next one the same thing may do no good at all. In one year cramp, in another vomiting, in another purging, in another fierce collapse alone is the prominent symptom. Death however shews no fickleness in any case, and not till the decline of the epidemic can remedial "cures" be trumpeted. Indian practitioners have tried every remedy that is known in medicine and they have failed to find a cure.

Reputed "cures" for cholera have not been wanting and each in turn has had an ephemeral notoriety which experience has extinguished, and on the homœopathic principle of "like curing like," even purgatives have had their day. In Moore's "Manual of the Diseases of India," which as breathing "restorative" medicine is in my opinion more valuable than other more pretentious but depletive volumes, we find a clear summary of cholera and a list of authors* who have written on the affinity between cholera and ague. McCulloch in 1827 wrote: "cholera belongs predominantly, if not exclusively to the same climates, the same soils, or generally to all those countries in which other diseases of malaria abound." Dr. Steifensand says, in 1848, "The Delta of the Ganges, this prolific and infamous malaria land is also the cradle of Oriental cholera. Whether the disease has first appeared in our times, or whether it had been present in earlier centuries, is a question, which it is difficult to decide upon. We know, however, that in August of the year 1817, it was observed by Dr. Tytler at Jessore for the first time, in the person of a Hindoo, and acknowledged as

* Rose, Cormack, Murray, Royle, Bird, Armstrong, Beli, Stewart, Smart, Scrive and Billing.

a new species of disorder. On the following day many similar seizures took place in the neighbourhood of the first patient, which ended immediately in death, in the same way that the first case had done. The disease at once extended itself with striding rapidity not only through the whole town, but to the districts far and near, along the various branches of the river and so early as September reached the capital, Calcutta.*

Dr. Steifensand points out the way in which cholera travels to Europe, and how it runs along the courses seething with malaria, seeking first a footing in the valleys and along the course of rivers, from which head quarters it sends out its poisonous emissaries to the highlying lands around.

The practical conclusions that he draws from his theory is simply this, that in cholera times people should take daily a few grains of quinine as a prophylactic, more especially those who have suffered from intermittent fever or who have been in a malarious district.

Intermittent fever in our inland metropolitan hospitals is a simple and a rare complaint. Students hear of it at lectures on medicine, but unless they see the practice among the sailors of the 'Dreadnought' hospital or at some hospital near the docks, or in one or other of our many sea-port towns they can form no idea of its serious nature. The intermittent fever of the Walcheren expedition, or that so lucidly set forth by Dr. Shapter in the "Library of Medicine," remains a literary curiosity and nothing more. But as we travel eastwards we find it in its strength. The medical officers serving with their regiments in the East know it well enough, and their brethren of the Indian service are especially familiar with it, for malaria still has its stronghold in India, as in the time of our forefathers in medicine. Dr. Norman Chevers, of the University at Calcutta, considers cholera and the complaint popularly known in medical writings as "sun stroke" to be identical in its first cause. As I believe sun stroke to be one effect of malaria, I consider he is right in his opinion. In 1858, when the troops under Sir Colin Campbell were being concentrated on Lucknow, prior and subsequent to its fall, sun stroke was the prevailing disease among the troops. The late Drs. Diaper and Fryer of the H.E.I.C., service and myself had daily opportunity of seeing this deadly complaint. It took place in men exposed to the sun and air and also in those in the hospital surrounded by every care and cooling appliance. In all cases serous effusion under the arachnoid was présent with congestion of the lungs. In my opinion these cases are simply the effects of *malaria*,

* Die Asiatische Cholera auf der Grundlage des Malaria-Siechthums dargestellt von Dr. C. A. Steifensand, Crefeld, 1848.

causing through its poisonous influence on the nervous system stagnation of the circulation and effusion of serum on the brain. Sun stroke is not common in those whose spleen enlarges, for the latter organ acts as a safety valve for the circulation. Natives seldom die of sun stroke, but every third native you see has a spleen bulging out his abdominal walls. I never saw a native who had not suffered from malarious fever at one time or another. It is such an every day occurrence that they just cover themselves over with a cloth and lie in the verandah of your house until the shake is over, and if you go through the barrack rooms of your English soldiers there is sure to be some one shaking in his cot with his dinner getting cold beside him.

In the Indian papers it is not uncommon to see little paragraphs, concerning the "accidental death" of an occasional native, caused by a moderate blow that an ordinary Englishman would laugh at. In the weaker constitution of the native, nourished by flour, peas, rice, butter, and milk (as it is only the lower castes that eat occasionally of animal food,) an ordinary blow will cause rupture of the spleen, friable and the frequent seat of abscess. Abscess of the spleen through fever, though common in natives is rare in Europeans. My idea concerning cholera, sun stroke, intermittent, remittent and typhoid fevers as seen in India is simply this: *malaria* causes all. We know the parable in the Scriptures. The sower went out to sow and some seed fell on good ground, other on stony ground and so forth. Malaria is sown in one of good constitution and intermittent fever of marked type and daily occurrence takes place. Let the same be sown in a weakly man who has suffered from previous attacks, and remittent fever will result, relapsing surely into typhoid if the doctor uses depletive measures.

In another, congestion of the lungs and effusion on the brain is caused, or sun stroke. In another, congestion of the bowels and effusion, or cholera. But it has all the same beginning, that beginning being the inhalation of malaria, which acts immediately on the nervous system, whose sudden derangement paralyses for a time the *circulation* of the blood.

The spleen bears congestion better than any other organ and the longer the "shake" the *larger at the instant* grows the spleen.

The lungs have no safety-valve and congestion with them soon leads to suffocation. The hot, thick, stagnant air on the Indian plains has too little oxygen in it to permit of the temporary slowness of the process of inspiration. The heart flutters wildly to carry on the circulation and the pulse at the wrist in its tremulous and feeble rapidity indicates the danger. The skin is red hot to the touch, consciousness is gone, and such a condition is present which defies all human power to succour.

Out of about fifty cases of "sun stroke" such as this, I have

only seen one recover. Champagne had been given in this latter instance, but as restoratives had been used in all cases, it is but a poor triumph to relate. So weakly, pale and miserable was the condition of the soldier when convalescent from this complaint, that he would have done justice to an heroic treatment that had bled by the pint and purged by the gallon. The feeble flame of life had flickered to its lowest ebb, and a little bleeding and some calomel would have so weighted the fleeting power of life as to close its race in sudden death.

After the cholera of 1861, a cholera commission was instituted by the government of India, and a number of gentlemen, East India civil servants and doctors in high places in the Army Medical Department and the Indian service respectively, made a tour of Bengal and visited the localities where the plague had raged. A number of statistics were drawn up and a goodly volume crowned its labours. Deficient "sanitation" and wells impregnated with surface drainage were among the causes to be remedied. But who can remedy the climate reeking with malaria? When the baked and arid ground, cracked and scorched with the fierce rays of a tropical sun, is rained upon with a stormy deluge for weeks together, and the sun still shines with equal heat, who can hinder the moist vapours of malaria from ascending to the nostrils? In the night as the sentry stops on guard, the croaking of the frogs revelling in the moisture and the sudden growths, breaks the stillness. The damp night air after the fervid day is scarcely healthful. Yet no one looks more to the comfort and well being of his men than the British officer: He will see to his company getting their morning coffee and their quinine as a prophylactic. He will lighten the guards and sentry duties both by day and night. He will see to the drainage, he will look to the quality of the water, and he will carry out as far as possible all suggestions given by the doctor for the health of the men; *but he cannot take his men to the Hills without superior orders.* And as long as our Government chooses to garrison the plains of India with English troops *during the unhealthy season*, so long will mortality shock our "sanitarians" and philanthropists at home. This mortality surprises no one who knows anything about the matter. It is useless for staticians to run with practised eye down the row of figures and single out the deaths from diseases which they consider that good "sanitation" would prevent. It is childish to say, if it were not for cholera, dysentery, and sun stroke, our troops would live as long as in England, when we can no more prevent these diseases than we can prevent the sun from shining on the earth.

In a small book "On Tea-planting in the Outer Himalaya," which I published in 1860, I tried to shew the healthy nature

of the hills of India, and although more success attended it than might have been expected from the indifference usual on all Indian matters, it has not led anybody in authority to advocate the location of our troops in the Indian hills, to be brought down during the cold season to their barracks in the plains. But I am persuaded until some such system is instituted we may groan yearly over our Medical Department Blue-book and tear our hair for a remedy *in vain*.

One of the peculiarities of the Cholera epidemic of 1861, was the manner in which it was accompanied by fever, and with a strange fickleness a severe type of fever seemed to alternate at the different stations with a deadly cholera. On looking at Appendix No. XXIV of the Army Medical Department's Statistical Report for 1861 it is apparent that upwards of two-thirds (about 25,000 men) of the entire British Force of 37,483 men in Bengal during 1861 were in hospital during the year with intermittent and its allied fevers (remittent, continued, and typhoid) exclusive of admission from other complaints. One thousand four hundred and twenty-three were seized with cholera, and eight hundred and eighty died. Statistics of former years shew similar results. Madras and Bombay had also their quatum of cholera and of fevers, the latter in large proportion to the former.

The rains in 1861 were exceptionably heavy, and miasma was consequently rife. In the above numbers the women and children of our troops are not included, neither is any mention made of the natives of the country who were swept off the face of the earth by cholera and shattered by fever. These statistics give, therefore, but a poor idea of the actual condition of the country. It is apparent, that from all causes, Bengal lost 47 per 1,000 of English soldiers during 1861, and that every soldier in the country was twice in hospital during the year; but, excepting cholera, fevers, dysentery, hepatitis, diarrhoea, splenitis, and the like, to use the words of table-makers, they were equally if not more healthy than their brethren at home.

As some of the stations in Bengal and the Punjaub are healthy (Hazareebaugh, Saugor, Shahjehanpore, Sealkote, Murree, Dugshai, Subathoo, &c.), their small averages of sickness and mortality in a *total* average reduce greatly the conspicuous unhealthiness of the pestilential places. Thus, statistics, with all their boasted efficacy, often do more harm than good. It must also be remembered that the sickness and mortality at Hill stations under the present system, as given in tables, are also calculated to mislead. Depôts for invalids from the plains are formed at Hill stations, and men die in healthy spots of diseases contracted in malarious districts. Cholera also occasionally, happily however rarely, attacks Hill stations, in the same way that in England we are not exempt from its visits.

Cholera began in Calcutta and Dum Dum in the early months of 1861, and it gradually went up country picking out a station here and there. Cawnpore, Morar, Gwalior, Delhi, Agra, and Meean Meer were visited. Like intermittent fever, cholera was present during the hot season, but its violence was expended during and after the rains (from June to September). From the 27th Foot at Morar the cholera spread to Gwalior Fort, where three companies of the 52nd Foot in medical charge of Dr. H. A. Gogarty, of the Regiment were quartered. The native village of Luskar at the foot of the Fort was first attacked, and then the European residents above. In Dr. Gogarty's report on the epidemic he states: "The disease as shown by the small number who recovered was of a very bad type; *there was not the severe purging, vomiting, or cramp*, usual in cholera, but there was great collapse and thirst, with a cold surface and a clammy skin. *The disease resembled the cold stage of ague* except in the following points: *No rigor occurred*, and with a *cold clammy skin* the patients *tossed off the bed clothes* and complained of *heat*. The duration of the longest fatal case was twenty-eight hours, and the shortest fatal case was three and a half hours." The Fort of Gwalior is on a hill, but the cantonment of Morar close to is on the level ground. Here the 27th Regiment lost a great number of men, women, and children, and compared with their great losses the number lost out of a small detachment was trifling. One of the patients who recovered at the Fort was cramped and purged, and vomited freely. In another who recovered these symptoms were not present.

Diffusible stimulants and mustard emetics internally, with heat and sinapisms externally, were used by Dr. Gogarty. Quinine was also given, but with no good effect. Dr. Peacocke, of the 27th, also tried quinine in the epidemic that carried off so many at Morar, but it had no effect.

The cholera did not appear at Jhansi in 1861, where our head quarters, under Dr. Haverty, were stationed; but it reserved its force for 1862. Fevers, however, were prevalent; still, they did not prevail there to the extent that they had done the year before, when the 89th Foot, out of a strength of 1,005 soldiers, had 1,659 admissions *with intermittent fever alone*. Cholera was also present at Morar in 1860, and the 71st Foot suffered severely from cholera at the same time that intermittent fever was also present. While at Jhansi, in 1861, every soldier of the 52nd was on an average nearly three times in hospital, and the soldiers at Lullutpore, not far off, were almost six times each. These large averages were due to the great prevalence of intermittent fever during and after the rains.

Of various malarious regions in Bengal, the rice valley of

Peshawur is notorious as a fever bed, but it is not much worse than the central Indian Gwalior district. In one month, out of a detachment of English soldiers numbering 193, in the prime and vigour of life, I had 185 admissions with intermittent fever only. In the native town close to, intermittent fever was as usual prevalent. In a few words I will sum up the various symptoms which were so curious and extraordinary in many cases as to confirm my opinion concerning the identity of cholera and malarious fever, modified only by the amount of poison inhaled, and by the constitution of a patient. In simple cases the cold stage would last for two hours at least, being accompanied by strong rigors; then would come the hot, and then the sweating stage. This would happen daily, until remedies had had some restorative effect, or until the weakened constitution added complications, masking the strong outline of the original disease. In many, this early stage (usually distinguished by strong rigors) was a condition of *deadly collapse without any rigor whatever*. Vomiting and purging accompanied the disorder in almost every case, whether rigor or otherwise, but if there was a difference those with severe rigors vomited and were purged the most. Then muscular cramps were present in many cases, and a severe pain in the abdomen in the region of the spleen, was usual. Some vomited blood, others passed it by stool. A few became jaundiced during the paroxysm, and in all, whether rigors existed or not, the spleen swelled *immediately* to an immense size during the cold stage, being plainly perceptible to the touch, and sometimes to the sight, below the left ribs. This swelling would disappear during the stages of reaction and during the intermission, and would neither be seen nor felt. Some of the cases were not unlike yellow fever. I made a *post mortem* on a bugler who died from dysentery, not very many weeks after he had suffered from marked ague, and a small raised surface of blue varicose veins on the tissue of the spleen proper, was all that told of the paroxysms of ague. This shows the readiness with which the spleen repairs itself, but that it exercises a most serious influence on the health if permanently injured by deposits owing to constant and violent paroxysms was sufficiently exemplified by the pallid faces of all, by the dropsy in many, and the other symptoms of impairment of the constitution that followed in all cases. In some in whom the rigors had been absent the permanent ague cake was the most conspicuous. I husbanded the strength of the men by every possible means. Of course I gave quinine, but quinine during a paroxysm is simply useless, as useless as in cholera in the same condition. It is vomited up again, and at any rate it is not absorbed, for absorption is nearly lost and the *function of the*

kidneys is stopped. When a man passes urine, either in cholera or in intermittent fever, it is pretty certain that the worst is past.

In the outset of the epidemic I gave a solitary emetic of powdered ipecacuanha root and any quantity of luke-warm water. I assisted Nature in her natural efforts at vomiting, and my reading told me that old Army authors approved the plan. It appeared to do no harm at first. Then a solitary purgative of jalap cleared the way for the inestimable quinine during the intermissions. All went well for a time, and I plumed myself on my emetic treatment, and talked about it at our little mess as a success. But the type of disease changed, or more probably the organs and constitutions of the soldiers became impaired, and weakened, for I gave an emetic in an ordinary case in the usual manner, but with the unusual effect of cutting off the life with the paroxysm. The spleen weighed either four or five pounds, but at one spot the blood had oozed out of the strained vessels, and, unlike the other spleens of the survivors, no contraction took place, but the patient died insensible. Effervescing draughts with stimulants were substituted with benefit. Port wine negus and Dover's powder, in addition to quinine, I found a valuable assistance, as it renovated the system against the next trying paroxysmal ordeal. Each day when the sun was up, the hospital and the barrack converted into one, reminded me of the cabin of a sea-going steamer in channel. The vomiting was incessant and exhaustive to the last degree. But in the cool of the evening there was stillness and comparative ease. This was the seed time for my remedies, and, accompanied by an attendant with a lantern and a kettle of port wine negus spiced and boiling, we gave a fillip to their flagging energies. The Dover's powder gave sleep, and the dose of quinine did its subtle duty against the following day. Beef-tea and arrowroot were not wanting. Lime-juice and soda-water were plentiful also, for the Indian Government is no niggard with its precious English soldiers.

I was unacquainted then with the *hypodermic* use of quinine, but I know now that my patients sufferings would have been almost immediately relieved by the subcutaneous injection of quinine, where quinine by the mouth proved useless.

This epidemic as above related is an attempted picture of malarious fever of which I had seen a good deal prior to my sojourn in Central India, but nowhere had I seen it in sharper outline, and nowhere did it simulate cholera more closely.

Let me recommend in cholera the subcutaneous use of quinine to counteract its poisonous influence on the nervous system, *proved to be useful* in a similar malarious disease, where its exhibition *by the mouth has failed*.

I have to thank Dr. Haverty, Surgeon of the 52nd. regiment to which I formerly had the honour to belong, for the information he has placed, in common with Dr. Gogarty, at my disposal.

As Dr. Haverty has had varied experience in cholera, both at home and abroad since 1849 and emphatically condemns all treatment that is not restorative, I think it right to warn practitioners against the broken reed of "purgation" as a remedy for an intensely exhausting disease. It has been tried and has been laid aside as worthless. Everybody in the profession who has seen cholera knows that the collapse of that disease is caused by the cholera poison in the blood, which, purgation *will not remove*. Dr. Moore, the best recent Indian author tells us there is a "deficiency of vital power in cholera," and any man with practical knowledge of the disease must say the same. Dr. Parkin, twenty years ago, shewed that the collapse of cholera was caused by a cholera poison in the blood, and was not the simple effect of purging.

Dr. Parkin recommends the drinking of carbonic acid gas in solution in cholera, and as great benefit has resulted from effervescing draughts, soda water and ammonia internally, with plain or mustard frictions externally, his system is desirable, and has the merit of doing no harm. *Ammonia* has been highly successful in many cases in India, and cannot be too highly recommended.

Common table salt was recommended by Dr. Beaman, of Henrietta street, Covent Garden, in 1832, as a certain prophylactic against attacks of cholera during an epidemic. The treatment of an actual attack of cholera by salt-water emetics was also advocated. This system was warmly espoused by the late Mr. Wakley, in his then youthful journal the *Lancet*. The veteran physician, Dr. Beaman, has informed me within the last few weeks that he has still the same faith in common table salt that he ever possessed, not from theory, but from a prolonged experience—a touchstone that crumbles many pretty theories to the winds. Dr. Beaman's system was urged on our Military Department during the Crimean War, and the then Director-General gave every assistance for the trial of Dr. Beaman's method among the troops. More recently salt has been successfully used in the Madras Presidency as a prophylactic in cholera, Dr. Beaman's son, who is a talented member of the Madras Medical Department, having ventilated the subject in the local papers. The emetic treatment of cholera is, therefore, no *new* theory. It stands to sense that any stimulating emetic will do good in collapse, while any depressing emetic will be poisonous. The chemical decomposition of the salt in the

stomach is considered to be the mode of its action as a prophylactic, chlorine being evolved, which is a most powerful disinfectant. Four satl-spoonfuls each day is the dose recommended.

A German physician some years since recommended in the *Times* as a cure for cholera, inoculation by quassia water; he also brought it forward at Calcutta in 1860. Much ridicule was showered upon him in many quarters, but I consider that his idea had in it the *germ* of success. Compared with quinine, quassia is a weak tonic, and compared with the injection under the skin inoculation is a rude method. Still, cramps in cholera have been relieved by scarifications sprinkled with morphia which is simply inoculation. The *Hypodermic* use of quinine in fever is an *established success*, and it remains to be proved whether it is not equally useful in cholera. The inhalation of "laughing gas" has been used in disease by American physicians, and although it has been ridiculed in England, there is no doubt that the proper use of *inhalation* in cholera will *more promptly and more directly counteract the poison in the blood than any other known process in medicine*.

The late Dr. Pereira, whose monument among us is a standard work on *Materia Medica*, made experiments with this extraordinary gas on about 100 persons, and he states that the effect on the nervous system when inhaled is "most remarkable" causing dancing, fighting, &c., in most cases. Fownes tells us that the effect of the gas is not followed by depression. If we are to do any good in cholera we must forsake the beaten tracks of ordinary routine. Chloroform is a recent innovation but it has converted an operating theatre from a sickening shamle, resounding with the screams of tortured human beings into a peaceful sleeping place.

And the unmarked rows of English graves in our numerous Indian Golgothas should stimulate us to make more *cures* and talk less abstract science.

For it must be remembered that *time* is precious in a cholera case; there is no time for learned disquisition; the remedies must be prompt. *Reaction* is the result to be obtained by any remedy proposed by common sense; the strength must be supported in any and every possible way, and with God's assistance we may hope to rescue the patient from impending death.

The strong likeness between cholera and malarious fever is the link that I spoke of in the beginning of this essay, and it remains for practical veterans in the profession to prove whether any true relationship exists or not.

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